

**TO:** Director, National Institute for Occupational Safety and Health

**FROM:** California Fatality Assessment and Control Evaluation (FACE) Program

**SUBJECT:** Electrician apprentice dies in a fall from a ladder in California

### ***SUMMARY***

#### **California FACE Report #96CA015**

A 34-year old male electrician apprentice (victim) died after falling 25 to 30 feet from an extension ladder. The victim was preparing to move an exit sign with emergency lighting attached. He was working on an electrical junction box attached to a ceiling truss of a commercial building. His fall was most likely caused by reaching where he could not maintain his balance while performing his work or not properly engaging his feet on the rungs of the ladder. The CA/FACE investigator concluded that, in order to prevent future occurrences, employers should:

- . use an aerial lifting device to access heights where workers are required to use both hands, tools and to shift body positions.
- . perform an initial hazard assessment of the job prior to beginning work to determine the safest methods of performing tasks required.
- . assure job supervisors are trained and aware of their safety responsibilities and duties.

### **INTRODUCTION**

On October 9, 1996 at 6:30 a.m., a 34-year old male electrician apprentice fell 25 feet from an extension ladder and died on October 14 at 8:45 p.m. that evening. The CA/FACE investigator learned of the fatality on November 15, 1996 from the coroner's office. The CA/FACE investigator responded to the site of the incident on December 2, 1996. He met with an electrician who was present during the incident and took photographs of the site. On January 21, 1997 the CA/FACE investigator used a Spanish interpreter to interview the job supervisor. The CA/FACE investigator obtained copies of the coroner's report, death certificate, and police report.

The employer was an electrical contractor and had been in business for 6 years. The company had 18 employees and the decedent had been with the company for 3 years. The decedent had worked at the site for 2 months. The job had been in progress for three months. Due to layoffs, including the regular job supervisor, the supervisor at the time of the incident had been acting as supervisor for three weeks. The supervisor was unsure of his safety responsibilities and how much time he devoted to safety. The company had written procedures

for the task being performed and the decedent had been trained in the use of a ladder. Safety tailgate meetings were held every morning cautioning employees about job hazards.

## **INVESTIGATION**

The site of the incident is the storeroom of a large commercial building. Finish construction was being done in anticipation of the opening of a retail store. The employer was completing electrical construction on the interior of the building.

The job at the time of the incident was to move an exit sign that had emergency lighting attached (**Exhibit 1**). In order to accomplish this, the decedent was assigned the task of rewiring which included changing the existing conduit and, thereafter, covering the junction box. A 35-foot extension ladder had been set up to access the junction box attached to a ceiling truss (see exhibit 2). The top of the ladder was resting on a 4-inch automatic sprinkler feed pipe which ran perpendicular to the ceiling trusses. The left side of the ladder was stabilized against storage shelving (**Exhibit 3**). The decedent had worked off the same ladder the day prior to the incident. At that time his supervisor had asked him if he was comfortable working in this manner. The decedent stated that he was and that he could perform the job. Just prior to the incident, the decedent climbed the ladder to work at the junction box location. The junction box was energized with 277 volts AC.

The junction box was located such that the decedent, while standing on the ladder, would have had to reach back or turn around on the ladder to access it. The company's employees had just begun work for the day. The supervisor and another electrician were also working in the storeroom. Suddenly, they heard a noise. When they ran to investigate, they found the decedent had fallen off the ladder and onto the concrete floor. The witnesses stated that the decedent made no noise prior to hitting the floor. The supervisor used rags to attempt to stop the bleeding. The other employee ran to the nearest phone in the store to call 911. The paramedics were dispatched at 6:39 a.m. and arrived at 6:44 a.m. They found the decedent to be unconscious and to have agonal respirations. The paramedics initiated rescue efforts. The paramedic ambulance transported the decedent to a local hospital where he was treated for severe head injuries. The decedent died at the hospital on October 14, 1996 at 8:45 p.m.

Investigation subsequent to the incident indicated that the ladder used in this incident was in good condition and was stable as setup. The fall may have been caused by the decedent reaching beyond his ability to maintain balance while performing his work. It is also possible, especially if he decided to turn around on the ladder, that his feet did not properly engage the rungs of the ladder. Another possibility is that the decedent was shocked by an energized circuit which caused him to lose his balance and fall off the ladder. Although the autopsy did not reveal any burn marks on the decedent, it is not unusual for burn marks to be absent when electrical contact is made with low voltage circuits.

## **CAUSE OF DEATH**

The certificate of death stated the cause of death to be craniocerebral blunt force trauma.

## **RECOMMENDATIONS/DISCUSSION**

### **Recommendation #1: Employers should use an aerial lifting device to access heights where workers are required to use both hands, tools and to shift body positions.**

Discussion: The area where the ladder was set up was cramped because of installed shelving. The ladder was extended with the top resting on a 4-inch automatic sprinkler feed pipe. The conduit and junction box was located approximately 4 feet behind the pipe. In order to work on the junction box, the decedent would have had to stand on the ladder, near the top and work directly over his head or, perhaps, even a slightly behind him. The alternative would have been to turn around, facing away from the ladder to work overhead. In either case, an employee would be left with nothing to hold on to or lean on if he were to lose his balance. A more appropriate method of working in this situation would be to access the electrical conduit and junction box with an aerial lift. Its platform would allow for much better footing and its guardrail would most likely prevent a fall. If an aerial lifting device had been used, this incident may not have happened

### **Recommendation #2: Employers should perform an initial hazard assessment of the job prior to beginning work to determine the safest methods of performing tasks required.**

Discussion: Although the ladder used in this incident was in sound condition and appeared stable after the decedent's fall, it may not have been the proper choice for the job. A close assessment of the job would have revealed that a ladder could not be placed so a worker could access the work area safely. When the ladder was put into place, the electrical junction box the decedent was to work on was located behind the angle of the ladder. If a hazard assessment had been performed, it would have revealed that a ladder was not appropriate for this job.

### **Recommendation #3: Employers should assure job supervisors are trained and aware of their safety responsibilities and duties.**

Discussion: The job supervisor at the time of the incident revealed that he was unsure of what his safety responsibilities were. He thought the duties were probably safety meetings and paperwork. He further stated that the employees were responsible to take care of themselves. It is normal industry procedure to designate job supervisors as the employee responsible for safety on the job. It is unrealistic to require and expect employees to be responsible for their own safety. An experienced employee, such as a job supervisor, is needed to perform safety duties such as audits, inspections, observations of work habits and discipline. If a supervisor having safety knowledge and proper authority had examined this job, he may have declined the use of a ladder and used a safer method of accessing the electrical junction box.

## **References**

A Consumer's Guide to Safe Ladder Selection, Care and Use, U.S. Consumer Product Safety Commission, Washington D.C., 1980

Barclays Official California Code of Regulations, Vol. 9, Title 8, Industrial Relations South San Francisco, 1990

Injuries Resulting From Falls From Elevations, U.S. Department of Labor, Bureau of Labor Statistics, 1984

MacCollum, David V., Construction Safety Planning, Van Nostrand Reinhold, New York, NY, 1995

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**March 20, 1997**

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**May 20, 1997**

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**FATALITY ASSESSMENT AND CONTROL EVALUATION PROGRAM**

The California Department of Health Services, in cooperation with the Public Health Institute and the National Institute for Occupational Safety and Health (NIOSH), conducts investigations of work-related fatalities. The goal of this program, known as the California Fatality Assessment and Control Evaluation (CA/FACE), is to prevent fatal work injuries in the future. CA/FACE aims to achieve this goal by studying the work environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in fatal injury, and the role of management in controlling how these factors interact. NIOSH-funded, state-based FACE programs include: Alaska, California, Iowa, Kentucky, Massachusetts, Michigan, Minnesota, Nebraska, New Jersey, New York, Oklahoma, Oregon, Washington, West Virginia, and Wisconsin.

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**Additional information regarding the CA/FACE program is available from:**

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